calcarine fissure. Whether it is only the posterior extremity of the fissure or portions in front of this that participate in the formation of the centre, it is now impossible to say. The occipital visual tract is situated in the inferior part of the optic radiations, and forms a fasciculus some millimetres to a centimetre thick. *Hemianopsia is produced only by a lesion of this fasciculus or of the calcarine cortex.* He has been unable to find a single well-observed case opposed to this view, although there are in medical literature some defective or badly described observations that seem to oppose it.

As to the supposed localization of this centre in the parietal lobe, Henschen points out that while numerous cases of lesions of this lobe have been accompanied with hemianopsia, many more cases of such lesions have existed without any such symptom. He gives diagrams of a number of these, in some of which the lesion was small, but in others it was very extensive. An analysis of these cases shows that the lesion of the parietal lobe causes hemianopsia only when it involves the visual fasciculus in the inferior portion of the optic radiations. The same applies to lesions of the precuneus and of the temporal lobe. A great quantity of anatomico-clinical facts locate the visual centre in the occipital lobe.

The exact location of the centre in this lobe must be learned from cases described with great detail. Evidently the effects of a lesion will vary with the depth to which it extends in the white matter. The distinction must, therefore, be made between lesions involving the white matter and those confined to the cortex. Only the latter can indicate the exact localization of the centre in the lobe. It is noted, however, that in cortical lesions the fibres always suffer, so that the subcortical layer shows degeneration. Lesions strictly subcortical have, therefore, the same significance as cortical lesions.

As to the location of the centre on the lateral surface of the lobe, Henschen figures six cases of such lesions, in some cases bilateral, without hemianopsia or blindness. He knows of no published case in which lesions of the lateral surface not involving the optic radiations have caused blindness, except one where the depth of the lesion was not indicated. On the contrary, lesions of the median surface of the lobe produce hemianopsia even when limited to the cortex. Not all such lesions, however, cause it. He figures three cases, one with extensive and multiple lesions in which sight was preserved. In none of these was the cortex lining the calcarine fissure affected. He then figures sixteen cases of lesion of the median surface in which hemianopsia did occur. In some the lesions were limited, in some extensive, but all involved the walls of the calcarine fissure, or the visual fasciculus, the lower part of the optic radiations.

Bearing on the question of the limits of the visual centre, Henschen has recorded one case in which the lesion was limited to the cortex of the calcarine fissure and the hippocampus with hemianopsia. The lesion had been stationary several months, was a softening from thrombus, and the white substance was affected secondarily only to the depth of 1 or 2 millimetres. The patient was intelligent, and the visual field had been repeatedly taken by different observers. The microscopic examination was minute, and the case uncomplicated by lesions of the central ganglia. It is impossible at present to limit the centre more precisely than seems to be done by this case.

A point of peculiarity in the anatomical organization of this region is presented in the molecular layer of the cortex, which is here very thick.

Regarding the physiological organization of this centre, Henschen believes, in opposition to most other writers on the subject, that the centre for colors is coincident with that for light, although color-impressions may be perceived by particular cells or by a special layer. Cases are still lacking to decide fully this point. Henschen is also convinced that both the direct and the crossed fasciculi are represented in the cortex of the calcarine fissure, the cortical elements belonging to them being probably placed the one alongside the other. If the opposite theory of Munk, founded on experiments on the lower animals, were applicable to man, monocular hemianopsia would be certainly very common. Henschen knows of but two imperfectly observed cases, in one of which there was no autopsy, while in the other it was very incomplete.

Henschen proposes to designate as the cortical or cerebral retina this part of the cortex lining the calcarine fissure, to distinguish it from other portions of the cerebral cortex taking part in the act of vision, which might properly be included under the more general term visual centre. He thinks the question as to whether we can determine which part of this area represents the macula lutea and which the peripheral visual field, is to some extent answered by cases reported by Hun (this JOURNAL, January, 1887), by Wilbrand, and by two of his own. In one of the latter the right occipital lobe had been extensively disorganized, including the optic radiations, while the left presented nutritive disturbances and slight softening which rendered useless the cortex of the posterior two and a half centimetres of the calcarine fissure. Yet this patient could read fine print to the last days of her life, showing unimpaired vision at the macula. In another patient with bilateral lesions of the cuneus and destruction of the cortex of the posterior part of the fissure on the right side the central field was also preserved, showing that it did not depend on the cuneus.

The arrangement of the cerebral or cortical retina appears to be, with the macula anteriorly, the peripheral field in the horizontal meridian posteriorly, the upper lip of the fissure corresponding to the upper part of the retina (lower field), and the lower lip of the fissure to the lower part of the retina (upper field). Probably each half of each macula lutea is represented in both occipital lobes, and each quadrant—upper and lower—receives fibres through both the upper and lower parts of the optic radiations.

CAUSES OF FAILURE OF IRIDECTOMY TO RELIEVE GLAUCOMA.

E. NEACHER COLLINS, in his extensive experience as Curator to the Royal London Ophthalmic Hospital, found that by far the commonest cause (*Lancet*, No. 3721) of failure to relieve glaucoma by iridectomy was the non-removal of the iris up to its extreme periphery, so that a portion of it is left blocking up the filtration-area. In glaucoma of long standing the root of the iris becomes absolutely adherent to the cornea, and when drawn upon, instead of tearing at its junction with the ciliary body, tears at the point where it ceases to be adherent, so that the filtration-area never becomes opened up. On this account he urges the necessity of performing iridectomy early in chronic glaucoma. Another cause is adhesion of the lens-capsule to the wound, from slow re-forming of the anterior chamber. This causes the pressing of the stump of the iris, or the ciliary processes, against the ligamentum pectinatum, in the situation of the coloboma for cases of this kind. Scleral puncture has been suggested as a preliminary to iridectomy, and has answered well; but a possible danger of this procedure is suppuration of the vitreous, of which Collins has seen one case. Prolapse or adhesion of the ciliary processes to the sclero-corneal cicatrix not infrequently occurs when the incision has been very peripheral. This blocks the filtration-area even if the iris has been removed up to its extreme periphery. In acute glaucoma he does not think it necessary to make the incision very peripheral, provided an iridectome-dialysis be done. The iris, unless already firmly adherent to the cornea, tears away naturally at its root when drawn upon, wherever the incision is, and a peripheral incision certainly increases the risks of the operation.

CHANGES IN THE CILIARY BODY FROM TAPPING THE ANTERIOR CHAMBER.

RICHARD GREEF (Berlin), by experiments on rabbits, has found (*Archives of Ophthalmology*, vol. xxiv., No. 1) that when the anterior chamber is opened the aqueous humor which escapes does not coagulate on standing, and contains neither fibrin nor albumin, thus differing from blood-serum. If, however, the anterior chamber be soon opened a second time, the fluid that escapes coagulates promptly, is rich in albumin, and contains much fibrin; and some hours later there is usually a deposition of fibrin in the anterior chamber in the form of a delicate membrane which disappears in a short time.

On enucleating and examining microscopically the eyes thus treated Greef found remarkable changes confined to the ciliary processes. Immediately after the puncture large vesicles appear formed by the elevation of the epithelium, and containing coagulated masses, clusters of red corpuscles and occasional white ones. They are more numerous on the anterior portion of the ciliary processes. Ten minutes after the puncture they are to be found in all stages of development—small flat elevations of the epithelium, incipient vesicles, numerous large vesicles, and vesicles collapsed. Twelve hours after puncture small developing vesicles may be found; after three or four days some vesicles are still seen; but after six days no trace of them remains.

ANEURISMAL PROPTOSIS OR VASCULAR PROTRUSION.

In reporting a case of bilateral exophthalmos with hemorrhagic neuroretinitis, probably from traumatic intracranial arteriovenous aneurism, G. E. DE SCHWEINITZ (*International Medical Magazine*, vol. iv., No. 1) brings together cases, hitherto uncollected, to the number of 37, which, added to those previously collected by Sattler and Nieden, give a total of 181 cases. Of these cases, traumatism is responsible for about 60 per cent. Exophthalmos is usually confined to the side of injury, but was bilateral in 12 cases out of 96.

In the treatment of this condition ligature of the common carotid yields the best results. This operation was performed in 102 cases with 11 deaths, 3 of which it is claimed were not attributable to the operation. The earlier operations were done, however, without the advantages of aseptic surgery. Of the cases collected by de Schweinitz, 21 were operated on, all since 1886, without a single death.

De Schweinitz's case occurred in a man aged forty-one years, injured by an explosion, causing unconsciousness, but no demonstrable fracture of the skull. Three weeks later there was venous hyperæmia of both the external and retinal vessels, which continued. Ten months later there developed a roaring in the head like the puffing of an engine, with an objective bruit, optic neuritis, and retinal hemorrhages.

Optic Neuritis of Gonorrhœal Origin.

Panas (Paris) attributes to this cause (*La Presse Médicale*, February 23, 1895) a case of double optic neuritis occurring in a waiter, aged twenty-six years, who had not suffered from syphilis, rheumatism, or any eruptive fever, but who for several years had suffered with chronic blennorrhagia, with repeated relapses. He suffered violent pain in the lumbar and sacral regions, extending to the pelvis and lower limbs. Micturition was painful, the urine thick and ammoniacal. No interference with motility or general sensation, and no trophic disorders were observed. The cause of pain was localized disease, believed to be gonorrhœal, at the lower extremity of the spinal cord.

With the right eye he counted fingers with difficulty at a metre and a half. The field of vision was concentrically contracted, with a true scotoma in the lower nasal portion. Color-sense was good, pupil and ocular tension normal. The optic papilla was protruding, cloudy, its border indistinct, capillary vessels numerous, veins full and tortuous, arteries small. There was fine dust-like opacity of the vitreous, but not enough to hinder the view of the fundus. The left eye showed no functional impairment, but similar fundus-changes, only less in degree.

A similar case Panas had previously observed in a man, aged twenty-nine years, who had suffered from chronic blennorrhagia, multiple articular and sciatic pains, and a meningitis of the base. He thinks other causes of neuro-retinitis can be excluded in these cases, and, on account of the well-known tendency of gonorrhœa to produce visceral and nerve-lesions, feels justified in regarding it as the cause of the optic neuritis.

Treatment of Corneal Ulcer.

Dr. Mules (*Trans. Eighth International Ophthalmological Congress*) claims great efficiency for the following method, even in the presence of extensive corneal infection and hypopyon. The cornea is first anæsthetized with an 8 per cent. cocaine solution, which also renders it hygroscopic, an iodoform-wafer softened by soaking a minute or two in cold boric acid solution is laid over the cornea, the lid drawn from the globe, and the eye gently closed. An iodoform-pad is fixed with strips of plaster, and a flannel roller-bandage firmly applied over the closed lids. The iodoform-wafer is prepared by dissolving gelatin in a saturated solution of boric acid, and stirring in iodoform reduced by trituration to an impalpable powder, then spreading over glass-plates to the required thickness, and allowing to dry.